FOOD GUIDE
FOR
WAR SERVICE AT HOME

PREPARED UNDER THE DIRECTION OF

THE UNITED STATES FOOD ADMINISTRATION

WITH A PREFACE BY HERBERT HOOVER
UNITED STATES FOOD ADMINISTRATOR

CHARLES SCRIBNER'S SONS

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PREPARED UNDER THE DIRECTION OF

THE UNITED STATES FOOD ADMINISTRATION

IN CO-OPERATION WITH
THE UNITED STATES DEPARTMENT OF AGRICULTURE
AND THE BUREAU OF EDUCATION

WITH A PREFACE BY HERBERT HOOVER
UNITED STATES FOOD ADMINISTRATOR

CHARLES SCRIBNER'S SONS
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A

ANNOUNCEMENT

In the spring of 1918 the Collegiate Section of the United States Food Administration was called upon to prepare a simple statement of the food situation as affected by the war, suitable for elementary and high school teachers, high-school pupils, and the general public. The demand arose because of the wide adoption of the three courses on this subject then being sent out weekly to universities, colleges, and normal schools throughout the country.

This little volume is the response to that request. It was written by Katharine Blunt, of the University of Chicago, Frances L. Swain, of the Chicago Normal School, and Florence Powdermaker, of the United States Department of Agriculture.

The records of the Food Administration have been open to the writers and they have had the advice and criticism of its officials and specialists. No effort has been spared to secure accuracy of statement in the text.

OLIN TEMPLIN,
Director of the Collegiate Section.

July 1, 1918.

PREFACE

The long war has brought hunger to Europe; some of her peoples stand constantly face to face with starvation.

All agriculture has been seriously interfered with. Food production has been lessened to the point of danger. Millions of men who had given all their time and energy to raising food have been killed; more millions are still fighting; other millions have gone from the farms into the great war-factories. Women, too, have been drafted from the fields and home gardens into the factories and to replace the absent men in a host of occupations. Great stretches of once fertile land have been temporarily ruined by the scourge of war; some are still under falling shot and shell. Belgium and France have lost millions of acres of productive land to the enemy. The fertilizers necessary for keeping up the production of the land still available are lacking.

All this means that the Allies have to rely on the outside for the maintenance of their food-supply. But because ships are fewer than they were, and because many of them must carry troops and munitions exclusively, these ships cannot be sent on voyages longer than absolutely necessary to find and bring back the needed food. They cannot afford to go the long time-consuming way to Australia and back; but few of them can be let go to India and the Argentine. They must carry food by the shortest routes. The shortest is from North America to England and France.

Therefore by far the greater part of the food provided for the Allies from the outside must come from us. As a matter of fact more than 50 per cent of this outside food for the Allies does now come from North America. And that is a great deal. It is very much more than we ever sent them before. Also we are sending more and more food overseas for our own growing armies in France and our growing fleets in European waters.

To meet all this great food need in Europe—and meeting it is an imperative military necessity—we must be very careful and economical in our food use here at home. We must eat less; we must waste nothing; we must equalize the distribution of what food we may retain for ourselves; we must prevent extortion and profiteering which make prices so high that the poor cannot buy the food they actually need; and we must try to produce more food by planting more wheat and other grain, raising more cattle and swine and sheep, and making gardens everywhere.

To help the people of America do all these things, and to coordinate their efforts, the President and Congress created the United States Food Administration. The Food Administration, therefore, asks all the people to help feed the Allies that they may continue to fight, to help feed the hungry in Belgium and other starving lands that they may continue to live, and to help feed our own sailors and soldiers so that they may want nothing. It asks help, also, in its great task of preventing prices from going too high and of stabilizing them, and of keeping the flow of distribution even, so that all our people, rich and poor alike, may be able to obtain the food they need.

For all this there is needed a "food education" of all our people. Every home in our broad land must be reached. One of the most effective ways of accomplishing this is by getting

information to the children of the nation about food and the possibilities and methods of its most wise and economical use. To obtain this result we must get this information into the hands of parents and teachers.

For the purpose of diffusing this information this little book has been prepared under the direction of the Food Administration. By following the suggestions for food conservation herein contained every one can render his country an important war service. I am sure that all will be glad to do this.

HERBERT HOOVER.

CONTENTS

FOOD GUIDE FOR WAR SERVICE AT HOME

CHAPTER I

THE WHEAT SITUATION

Wheat is as much a war necessity as ammunition—wheat is a war weapon. To produce it and distribute it where it is needed and in sufficient quantities is the most serious food problem of the Allied world. The continent of Europe, with her devastated fields, can raise but a small fraction of the wheat she needs, and ships are so few that she cannot import it from many of the usual sources.

Not one of the warring European countries has escaped serious suffering, and the neutral countries have suffered with them.

THE WORLD'S SUPPLY OF WHEAT

France, always an agricultural nation, was the most nearly self-sustaining of the western Allies. Now one-third of her wheat-fields are barren. Thousands of her acres have been taken by the enemy, or are in No Man's Land. Much of the land that has been fought over these past four years is now hopeless for farming, and will be for years to come. Even the territory still under cultivation cannot be expected to yield large returns, for laborers, tools, and fertilizers are lacking.

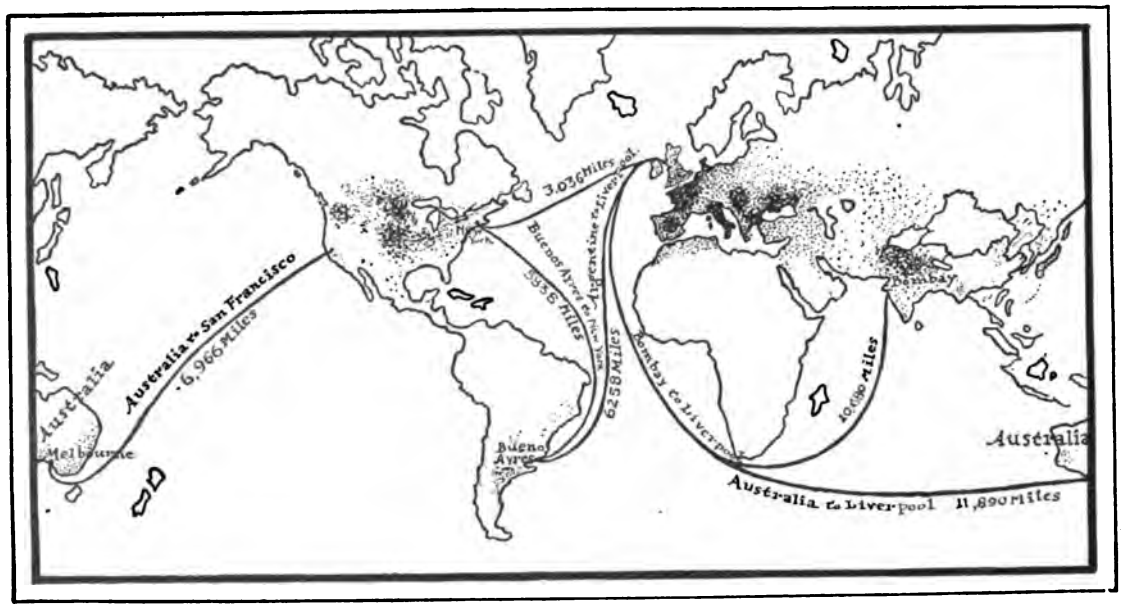
The men who have left the fields to fight have been replaced

chiefly by women, children, and old men, while furloughed soldiers at times help to bring in the crops. To get adequate return from the soil which has been tilled for centuries, tons of fertilizer are necessary. Fertilizers are an absolute necessity, and nitrates, one of the most important of them, can no longer be imported from Chile. The work-animals have been driven off by the enemy or slaughtered for want of food, and mechanics are lacking to repair and replace the worn-out farm-machinery. As a result of this, in 1917 France raised only enough wheat to supply 40 per cent of her need, instead of 90 per cent, as in pre-war years.

In England the situation is not much better. Unlike France, England has always imported far more wheat than she raised. But now through vigorous effort she alone of all the European countries has increased her cereal production so that it has actually been doubled. Being free from the devastation of war at home, she has been able to convert the great lawns of her parks and country estates into grain-fields. English women of all classes, an army of half a million, are working on the land. At the same time the consumption of wheat has been reduced. Even yet, however, the home-grown supply in England is only one-fourth of the wheat required.

In Belgium the devastation is so complete that the women, children, and old people left there would die of famine if food were not sent to them. Two and a half million Belgians daily stand in line waiting for food to be doled out to them. The United States must supply three-fourths of the wheat contained in their meagre bread ration. In Italy, too, the condition is serious, for she produces far less than she needs, despite every effort of her Government to stimulate production.

Germany and Austria-Hungary have not escaped universal



WHEAT FIELDS OF THE WORLD

suffering from lack of wheat. Germany before the war was a wheat-importing country, and Austria-Hungary was able to supply herself with wheat, but had none to export. Their war crops have been below normal, and even the wheat taken from conquered territory has not been sufficient to prevent severe shortage, resulting in bread riots in industrial centres.

The imports of wheat into both the Allied and enemy European countries to supplement the wheat of their own raising came in peace-times from seven countries—Russia, Roumania, Australia, the United States, Canada, Argentina, and India. Most of these have now failed as a source of supply.

Russia and Roumania were the great wheat-bins of Europe. They produced as much wheat as the United States, and sometimes more, and they were always able to make up or nearly make up the deficiencies of western Europe. Russia and Roumania are now themselves on the verge of famine. Even before their own situation became so desperate, they could get little wheat to the western Allies, because the enemy territory and the battle-lines made a great wall of separation.

Australia and India both continue to grow large crops of wheat, and have a surplus in storage, but it cannot be sent to Europe because of lack of ships. Australia has wheat stored from her last three crops. The Argentine had very poor crops in 1916 and 1917, and although the 1918 crop is good, it is scarcely more available to Europe than Australia's wheat.

So the wheat scarcity is not a question only of the amount of wheat in the world. It is a problem of getting it where it is needed —wheat plus ships. Not a single ship must go farther than is absolutely necessary. A glance at the map shows why wheat for Europe should come from North America rather than from Australia or India, or even the Argentine. The trip from Australia

is three times as long as from North America, so it takes only one-third as many ships to carry food to Europe from the United States as from Australia. The Argentine is twice as far from Europe as the United States, and therefore twice as many ships are needed to carry an equal amount of Argentine food to Europe. If this continent could produce and save enough next year to provide the whole of the Allied food necessities, we could save 1,500,000 tons of world shipping to be used for other purposes. **Every ship saved is a ship built to carry more men and more ammunition to France.**

WHEAT IN THE UNITED STATES

The United States has never had a large wheat surplus to export, and the last few years it has had an unusually low supply to meet the extraordinary demand. The 1916 crop was small. The 1917 crop was only four-fifths of normal, little more than we ordinarily consume ourselves. We entered the last harvest with our stocks of wheat and other cereals practically exhausted. Hence to feed the Allies until the 1918 harvest, we had to send wheat which we should ordinarily have eaten. All that we could send under normal conditions from July, 1917, to July, 1918, has usually been estimated at about 20,000,000 bushels, but **in the first eleven months of this time we actually did send 120,000,000 bushels, six times as much as we could have shipped without conservation.** One-half of the total output of our flour-mills in the month of May, 1918, went abroad.

This achievement in feeding the Allies has been made possible and will continue to be possible, through the measures of economy and substitution established by the Food Administration, and the constant and continued personal sacrifice of each one of us.

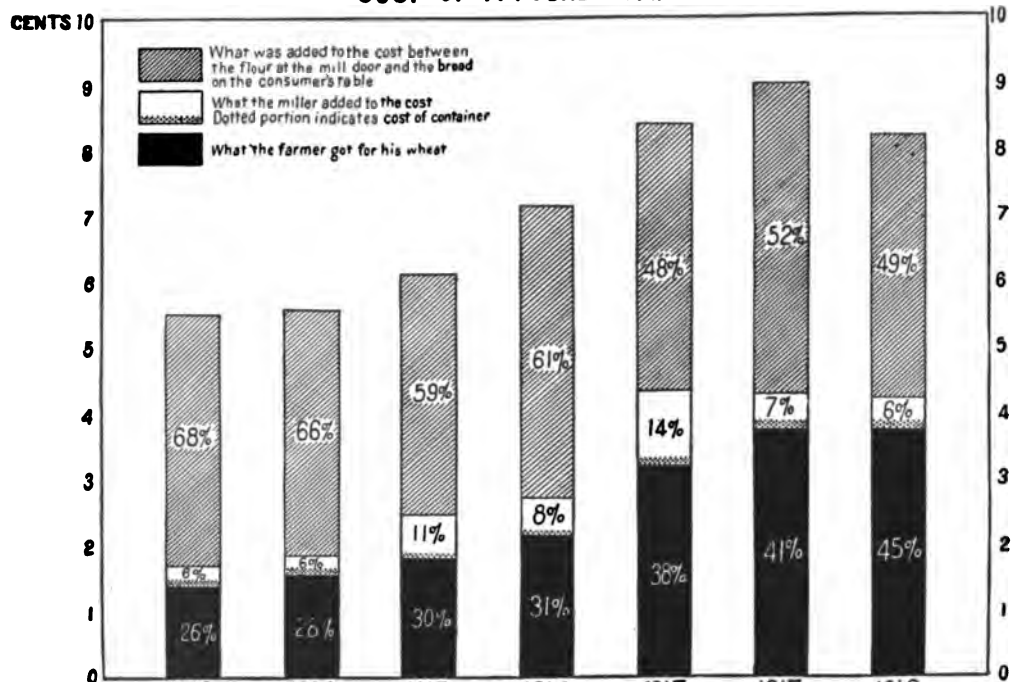
Even the 1918 wheat crop, successful as it promises to be, will not mean freedom from saving. Throughout the war there can be no relaxation. We must build up a great national reserve in years of good harvest for the greater and greater demands of Europe. **Never again must we let ourselves and the world face the danger that was before us in the spring of 1918.**

MEETING THE WHEAT SHORTAGE

To keep wheat constantly going over to our Allies and sufficient stores in the United States at the same time, is one of the big problems of the Food Administration. Production has had to be increased and consumption decreased. The price has had to be kept down, for in a time of shortage prices always tend to go up. It is true that high prices furnish one method of decreasing the consumption of food, but it is a method that means enforced conservation by the poor and no conservation by the rich. The burden thus falls on those least able to bear it.

To meet this situation the Food Administration has gone into the wheat business itself. **Practically entire control of the buying and selling of wheat is in the hands of the great United States Food Administration Grain Corporation.** Through this organization all wheat sales are made to the Army and Navy, to our allies, and to the neutrals. The price which it pays for these huge quantities sets the price for the entire country. The Food Administration also makes the movement of wheat from the farmer to the miller and to the wholesaler as simple and direct as possible. It prevents hoarding and speculation. "I am convinced," said Mr. Hoover, in April, 1918, "that at no time in the last three years has there been as little speculation in the nation's food as there is to-day."

COST OF A POUND LOAF OF BREAD



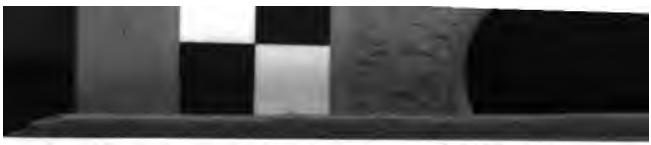
Note that since the middle of 1917 when the United States Food Administration Grain Corporation took over the control of flour, the cost of milling has been halved, and the cost of handling the flour also lessened.

As a result of this business management of wheat, the consumer pays less for flour, although the farmer gets more for his wheat. In May, 1917, the difference between the price of the farmer's wheat and of the flour made from it was $5.86 per barrel of 196 pounds. Fifteen months later the difference was 64 cents. In February, 1917, before the United States went into the war, flour sold at wholesale for $8.75 a barrel. In May, 1917, the war, with no food control, had driven the price up to $17. But in February, 1918, after six months of the Food Administration, it had gone down to $10.50 wholesale, and this in spite of unprecedented demand for our very short supply. Without control, flour would undoubtedly be selling for $50 a barrel. During the Civil War, with no world wheat shortage, but without food control, the price of wheat increased 130 per cent over the price in 1861.

The milling and sale of flour, the baking of bread, and the purchases of the individual are all regulated to a greater extent than would have scarcely been thought possible before the war.

Every effort has been made to produce a great 1918 wheat-crop. Congress, at the time the Food Control Bill was passed, fixed the price of the 1918 wheat at a minimum of $2 per bushel, and the President later fixed the price at $2.20. This has been high enough to encourage the farmer to increase his crop and not too high to be fair to the consumer. The Department of Agriculture, during the winter of 1917–18, had for its slogan, "a billion-bushel crop for 1918." It has worked intensively to help the farmer in selecting and testing seed and in fighting destructive insects and plant-diseases, and in every way to help him grow more wheat.

Constant reliance has been placed on the individual's intelligence and patriotism in wheat-saving. One of the unusual



aspects of the Food Administration is its confidence in the co-operation of the country and the response which this confidence has met. Wheatless meals are now a commonplace occurrence. Wheatless days are being observed in many hotels and homes. People all over the country have pledged themselves to do entirely without wheat until the 1918 harvest is available. About 100,000 barrels of flour were returned by individuals and companies during the spring of 1918, to be shipped to the Allies and the Army and Navy. The individual all over the country, consumer, dealer, miller, or farmer, has risen to the occasion to do his share toward the fulfilment of the Government's promise to Europe.

CHAPTER II

THE WAR-TIME IMPORTANCE OF WHEAT AND OTHER CEREALS

When the United States was called on to supply the Allies with much of its wheat and flour, we fortunately found at hand a plentiful supply of a great variety of other cereals. The use of corn was, of course, not an experiment—generations of Southerners have flourished on it. But we also had oats, rice, barley, rye, buckwheat, and such local products as the grain sorghums, which are grown in the South and West. All of them are cereals and all can be used interchangeably with wheat in our diet.

To understand clearly the value of cereals in the diet to-day, it is well to review the part played by food in general. Europe to-day is eating to live. She therefore thinks of food not in terms of menus but as a means of keeping up bodily functions, as sources of protein, carbohydrate and fat—terms seldom heard outside of the university a few years ago.

THE SIGNIFICANCE OF DIFFERENT KINDS OF FOOD

We need food first of all to burn as fuel for all the activities of the body, just as any other machine needs fuel. The fuel value of food, or its energy, is measured in *calories*. A calorie measures the amount of heat or energy given off when anything burns, whether it is coal in a stove or food in the body.

Practically all foods give this fuel or energy, but some give

much more than others. Fats give more fuel than an equal weight of any other food. Sugar and foods rich in starch like flour and corn meal are fuel foods. This is one of the reasons why they are chosen to be shipped abroad. The cereals always supply an important part of the fuel of the diet. Watery foods, like many vegetables and fruits, normally give less fuel. A person could not live on lettuce any better than a house could be heated with tissue paper.

If the food does not supply enough energy, a person will burn up part of his own body for fuel and will grow emaciated. Far too often we find children of the very poor who are undernourished because of lack of food fuel. Sometimes even well-to-do young people half starve themselves because they get "notions" about food. One of the terrible tragedies abroad is the hundreds and thousands of men and women and children who are worn and thin and sick for lack of food.

We need food, too, to keep the organs of the body running smoothly. Abroad, people are suffering not only because they have not enough food, but because they have not the right kinds of food. Milk and vegetables and fruits are especially useful. They are the chief sources of the much-needed *mineral salts* and the two *vitamines*. The vitamines are substances of great importance about which has centred much discussion lately and which scientists do not yet fully understand, though they realize that they are essential for the growth of children and for health in adults.

The *protein* of food is used to build the body if we are young, and to restore the daily wear and tear if we are older. The mineral salts are also necessary for this purpose. Protein will be discussed further in the chapter on meat and meat substitutes, but it should be realized here that the protein we eat comes

not only from these foods, but also from the cereals. Cereals supply a full half of the protein of many diets.

Cereals are therefore important for their fuel since they are rich in starch, and for their protein, and, if we eat the entire kernel, for their mineral matter and vitamines. They also have the pleasant flavor and texture which we have grown to like.

Wheat is no better than any of the other cereals. It possesses absolutely no nutritional advantage for man or beast over oats, corn, and rye. It has no more protein, and no better protein. It has no more fat and no better fat. It has no better mineral salts and in no larger amounts. It has no more fuel or better fuel. It is just *one* of the cereals, and there is not the slightest evidence that it is the best one. It has merely become one of our habits.

Corn and wheat and the other cereals are just as well digested if equally well prepared. A soggy piece of wheat bread may, of course, be less readily digestible than a well-made piece of corn-bread, but that is a question of skill in cooking, not of difference in cereals. Complaints have been heard in England about the war bread. It is true that it may be hard on those of frail digestive powers to change their food habits in any way, but Hutchison, an eminent London physician, in tracing down complaints, found that frequently people laid to the new bread ailments from which they had suffered before the war. "When in doubt, blame the war bread," seemed to be the motto.

THE SOCIAL IMPORTANCE OF CEREALS, ESPECIALLY WHEAT

The world eats more cereals than any other kind of food. They are so widely available, so cheap and nutritious, that they are a

main reliance of the human race. A shortage is always extremely serious.

Not only is an abundance important, but an abundance of the accustomed kind. In parts of India, the inhabitants use rice as almost the only cereal. When the rice-crop failed some years ago, thousands of people died of starvation with a supply of wheat available. They did not know the use of wheat as food.

Countries like France, which use their cereals chiefly for bread, are the most dependent on wheat, since wheat is the most easily made into bread.

In the United States cereals make up almost one-third of our food. Although wheat in most parts of the country has been the main dependence, we have used a much greater variety of cereals than most people, so that it is comparatively simple for the majority to make increased use of them.

The very poor must depend largely upon cereals because they can get more for their money from them than from other foods. Cereals, to most of them, mean bread. It is such a large part of their diet that doing without it means a far more fundamental and difficult change in their food habits than for the well-to-do with greater freedom of choice. Besides, the already overburdened working woman must get her bread in the easiest possible way—a ready-made loaf from the baker. The burden of scarcity or high prices falls on those least able to bear it.

Europeans eat even larger amounts of wheat than we. Over half the food of the French is bread, so if the wheat shortage were near the danger-line, it might lead to a serious weakening of the marvellous courage of the French people.

WHEAT FLOUR IN WAR-TIME

To use this country's share of the short supply of wheat to the greatest advantage the Food Administration has changed the making of flour to include more of the wheat-kernel. The difference between peace and war time flour is easily understood if the structure of grains is considered. Wheat and other cereals have kernels much alike; all have three principal parts:

The outer covering, called *bran*, is made up of several layers. This is rich in important mineral salts, and the rest is largely cellulose, or woody fibre.

The *germ* is the small part from which the new plant will develop. Here the small amount of fat in the kernel is stored.

The largest part of the kernel, called the *endosperm*, contains the nourishment to be used by the plant as it begins to develop. This is mostly starch, with some protein. It is the part of the wheat, for instance, which is chiefly used to make our white flour.

The kind of flour made depends on how much and what parts of the kernel are used. Graham flour is manufactured by grinding practically all of the wheat-kernel—a 100-per-cent use of the grain, called 100-per-cent extraction. Some people still fail to realize that Graham flour and Graham bread are wheat, perhaps because of the different name and brown color. The so-called "whole-wheat" flour is often 95 per cent of the kernel only, but may be as little as 85 per cent, depending on the amount of the bran and germ removed in the making.

Ordinary white flour contains the endosperm alone, with practically none of the bran and germ. Some brands before the war used up as little as 56 per cent of the wheat, leaving the

rest of it to be turned into lower-grade flours and cattle-feed. White flour thus uses less of the wheat for human food than Graham or whole-wheat flour.

Yet to convert all the country's wheat into Graham flour would not be a wheat-saving measure, because it is not so well suited to our trade conditions. Graham flour, for one thing, does not keep so well as flour of lower extractions, as the fat in the germ may become rancid in a comparatively short time. Flour in this country is often thirty days or longer in transit and may be months in warehouses, stores, and homes. A flour to be satisfactory under extreme conditions here or for shipment abroad must keep at least six months—too long to be sure that Graham flour will keep. In small countries like England, where flour is used up more promptly, a high extraction is more practicable than in the United States.

Moreover, while Graham and whole-wheat flours with their larger quantities of mineral salts are a more desirable food for some people than white flour, they are occasionally irritating to people with weak digestions, so that it would be unfortunate to have only these flours on the market.

The Food Administration, therefore, has considered that the most effective use of our wheat could be obtained by forbidding the manufacture of fancy flours of low extraction and making all flour contain at least 74 per cent of the wheat. This still gives a fine white flour that keeps well and is difficult to distinguish from that on the market before the war.

To help in the enforcement of its flour rulings, the Food Administration has licensed all mills and elevators which handle over 100 barrels of flour a day. If the rulings of the Food Administration are not obeyed the license may be taken away, and the business closed. The hoarding of flour has been stopped

by prohibiting mills, elevators, and bakers from having more than 30 days' supply on hand.

THE 50-50 RULE. ANOTHER WAY TO CUT THE CONSUMPTION OF WHEAT

Not only must the miller manufacture flour in accordance with new regulations, but the individual consumer must buy it under restrictions. To many people the first realization that war and food difficulties are necessarily associated, came with the announcement in the spring of 1918 of the now familiar rules for the purchase of flour. With every pound of white wheat flour, the purchaser must buy a pound of some other cereal; with every pound of Graham flour, three-fifths of a pound of other cereal.

The purpose of this regulation is, of course, to lessen the use of wheat by increasing the use of the substitutes. The housekeeper who through lack of initiative or ingenuity fails to feed the family the substitutes and lets them accumulate on her shelf has just so far failed to co-operate with the Food Administration. Many a housewife has learned the value of these cereals and will continue to use them long after the war and the Food Administration have passed into history.

A little thought will show the absence of any real burden in the 50-50 rule. A housekeeper for her family of four buys five pounds of wheat flour and five pounds of other cereals. She may use 1¼ pounds of the substitutes with the 5 pounds of wheat flour to make about 8 pounds of Victory bread—sufficient to give each member of her family 2 pounds of bread during the week. She may serve an ounce of oatmeal as the breakfast cereal and an ounce of rice, hominy, or other cereal for each per-

son daily and will then have used all the substitutes. These cereals can be made into an endless variety of quick breads, cakes, and pastry, or combined with other foods as the main dish of the meal.

SUBSTITUTES FOR WHEAT FLOUR

The cereals on the market are varied enough to suit any taste. **Remember that as far as nutritional value is concerned, it makes practically no difference whether we eat wheat or oats, rye or barley.** The quantities of starch, protein, mineral matter, and fat are so nearly the same that any one of them can take the place of another. Oatmeal has a slight advantage over wheat both in protein and fat, and since oats is an abundant crop in our country it is an excellent substitute. Rice has a very little more starch and less protein than the others.

There is just one advantage that wheat flour has over the other cereals—it can be made into lighter and more durable bread. The reason for this is given in the next chapter.

Corn, the most abundant substitute. Indian corn is native to the United States. Since it carried the Pilgrims through their year of famine, it has always been considered our national grain. Other countries have adopted it to some extent, but more than three quarters of the world's corn is grown here. In 1917 our corn crop was 3,000,000,000 bushels, four times as large as our wheat crop. Most of the crop has always been used as a feed-grain, with only a small percentage for human food. The South has always used much more corn than the North, actually eating more corn than wheat.

The foods from corn and the ways of using them are more numerous than is often appreciated. Corn meal and corn flour

are the most important. We are making almost as much corn meal as wheat flour. The yellow and white corn meals, milled from different kinds of corn, are practically the same in composition, though slightly different in flavor. The method of milling corn meal makes more difference in the composition than the kind of corn used. The old "water-ground" meal was simply crushed between millstones and only the coarsest particles of bran bolted out. This ranks with Graham as a product of 100 per cent extraction and like Graham, it may not keep well, because the germ is left in. The new process, more like modern flour-milling, removes some of the bran and germ. The product is a granulated corn meal which keeps better than the other, and has practically the same composition, though to some people a less desirable flavor.

If corn meal is further ground and bolted, we have corn flour. Some of this has been put on the market lately and is proving a good substitute for wheat flour; but the amount available is only a small fraction of the amount of corn meal. Other important corn products are hominy of different kinds, hulled corn, and popcorn. The latter, usually eaten as an "extra," is really a valuable part of the diet.

Corn is the same satisfactory food whether it is eaten as mush in New England, *polenta* in Italy, or *tamales* in Mexico. Many of the people of Mexico and Central America live on corn and beans to a surprising extent. In portions of Italy the rural population have adopted the grain as their main food. Our corn-meal mush is their *polenta*, which is served sometimes with cheese, sometimes with tomato sauce or meat gravy.

Oats. An Englishman once taunted a Scotchman with the fact that while England used oats only for her horses, Scotland fed it to her men. "Ah!" said Sandy; "but where will you find

such horses as you raise in England and such men as in Scotland!"

The United States, more like England than Scotland, has used oats mostly for feed. The crop is second only to the corn-crop. Oats are eaten in the form of oatmeal, which is a finely granulated meal, and as the common rolled oats which have been steamed and put through rollers. There is little oat flour on the market at present. A successful and palatable home-made flour may be prepared by putting rolled oats through a food-chopper. Any of the forms of oats can be used in breads of all kinds, but the more finely ground flour can be substituted in larger proportion. The demand for oat products has grown so rapidly the last year that mills are running to their limit. Special machinery is required for its manufacture, so that a great increase in the supply is not feasible in a short time.

Barley and Rye. In using barley and rye for bread we are only going back to the methods of our forefathers. Barley is supposed to be one of the first cereals used by man. Good barley flour is a very acceptable substitute for wheat, but if too large a proportion of the kernel is included, it may be bitter in flavor.

Rye, of all the cereals, makes bread nearest like wheat, though the rye bread formerly made usually contained from 20 per cent to 80 per cent wheat flour. The supply is far below what we could well use. For this reason it is not included among the cereals which the housekeeper is allowed to buy on the 50–50 plan, and since March 31, 1918, bakers have not been allowed to use it as a substitute in baking on the same basis as the other substitutes.

Rice. Rice forms the chief food of hundreds of millions of people, and in many oriental countries is the staple cereal, like

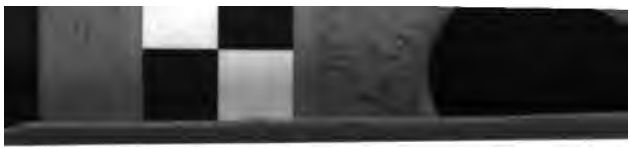
wheat with us. As a wheat substitute we may use it cooked whole or ground into a flour. The rice flour may be mixed with other cereals in making bread and cakes. The rice polish, which is a by-product secured by rubbing off with brushes the outside coating of the brown rice, is much cheaper. It has been sold chiefly for stock-feed, but it has possibilities as a flour substitute.

The rice-growers of the South are doing their best to supply the country with rice in quantity and to make known the possibilities of this cereal. The rice flour supply, though not large now, will doubtless be much increased by next year. One Louisiana mill, for example, is increasing its output from 150 to 1,200 barrels a day.

Other Cereal Substitutes. Besides the substitutes which are common all over the country, there are products produced in too small amounts to make them universal substitutes, such as buckwheat, cottonseed meal, and peanut flour, any of which can be used with other flours for baking. The Southwest produces both flour and meal from milo, kaffir, and feterita.

Flours are made from the Irish and sweet potato, from tapioca, from soy beans, and bananas, but they are manufactured in such small amounts that they do not take the place of wheat to any great extent. Potato flour comes nearest to doing this. It has always been used to some extent in Europe and it is being widely used in Germany now. Potato itself can be used instead of wheat. An extra potato at a meal will take the place of a large slice of bread.

Many of the substitute cereals do not keep so well as wheat, especially if they contain more than a minimum of moisture and fat. The housekeeper and the baker should therefore buy them in small enough quantities to use them up promptly and should keep them in a cool, well-ventilated place. May and



June and the summer months are the time when most care is needed.

It is the free use of these many wholesome substitutes that is making possible the necessary saving of wheat. We who appreciate their wholesomeness and their value can well break away from our wheat habit and gladly make the little effort sometimes necessary to begin using newer foods.

CHAPTER III

WAR BREAD

Bread is the staff of life for all nations. But "bread" does not necessarily mean the wheat loaf. At one time and place it has been barley cake, at another oaten cake, and at another corn pone. Bread has always been whatever cereal happened to be convenient. Even such unbreadlike food as rice is to some races what bread is to us.

Why, then, have we developed our wheat-bread habit? Partly because wheat bread has been easy to get and we have grown to like the taste, but chiefly because wheat flour gives the lightest loaf. To understand why, make a dough with a little white flour and water and then gently knead it in cold water. The consistency changes, the starch is washed out and a rubbery, sticky ball is left—the *gluten*, which is the protein of the wheat. It is this gluten in the flour that stretches when bread rises and then stiffens when it is baked, making a light, porous loaf. Wheat is the only one of the cereals that has much gluten; rye has a little and the others practically none.

Gluten seems to be essential to the making of a light, yeast-raised loaf. Products raised with baking-powder, for which our standard of lightness is different—"quick breads" like biscuits and muffins and cakes—do not require the gluten and can easily be made from substitute cereals. But for our ordinary loaf of bread, at least some wheat seems to be almost essential, though with skill in the making, rye can be made to serve in its place. Patriotic bakers and housewives all over the country

have been trying to produce a wheatless loaf which is light, palatable, and sufficiently durable to stand transportation. The durability is a very important consideration; crumbly corn bread cannot be distributed by bakers nor served to armies. Corn bread and the other quick breads are chiefly home-made products.

Our present problem, therefore, is to make the most effective possible use of our wheat gluten, to make it go as far as possible in our breads. Both bakers and private individuals have their share in solving the problem.

THE BAKERS' REGULATIONS. VICTORY BREAD

The bakers have co-operated loyally. Probably no other food industry has been more vitally affected by the war. **All bakers using three or more barrels of flour a month have been licensed and so are under the control of the Food Administration.** This means practically all the commercial bakers of the country, and many hotels, clubs, and institutions. About two-fifths of the bread in the United States is made in bakeries and three-fifths in the home. The bakeries have used 35,000,000 barrels of flour each year, so the importance of this field for conservation is plain.

The amount of wheat flour they are now permitted to have has been reduced: at present 80 per cent of their last year's quantity, or, if they are pastry and cracker bakers, 70 per cent. They must make no bread wholly of wheat flour. Some substitute must be mixed with the wheat. When the regulation went into effect in February, 1918, 20 per cent was required and later, 25 per cent. In pies and cakes there must be at least one-third substitute. The amounts of sugar and fat used are limited.

Even the sizes of the loaves are fixed, so that the extravagance of making and handling all sorts of fancy shapes and sizes may be avoided. Bread must not be sold to the retailer at unreasonable prices.

Victory bread is bread made in accordance with these regulations. The name "Victory" was chosen as representing the idea underlying the conservation of wheat. The name is really a present to the Food Administration, having been used by two large firms who gave up all rights to their trade-mark.

Hotels and restaurants are required to make or serve bread containing at least as much of the wheat substitutes as Victory bread. They may not serve more than two ounces of bread and other wheat products to a guest at a meal. Many of them have recently promised to use no wheat at all till the next harvest. That means, of course, that only through intelligent effort can they serve yeast bread.

THE INDIVIDUAL'S ANSWER TO THE BREAD CRY

Until the wheat-supply increases and the Food Administration lessens restrictions, use no wheat at all if you can possibly do without. Remember that you can make delicious muffins and other quick breads from the substitute flours. And you need no bread at all at some meals. An extra potato or a serving of rice can be eaten instead of the usual two slices of bread and the body will be supplied with the same amount of energy. Do not be the slave of old food habits. **When all Europe is eating to keep alive, fastidiousness and food "notions" must play no part in the dietary.**

Some people find it is almost impossible to do without the baker's loaf. Hundreds in crowded city quarters have no facil-

ities of their own for baking. Women doing their share in factories and workshops cannot get up earlier to make corn bread for breakfast. Victory bread must be saved for them. For households which must use wheat, the Food Administration has fixed a voluntary ration of 1½ pounds of wheat per week for each person. This includes wheat in the form of bread, pastry, macaroni, crackers, noodles, and breakfast foods.

All who can should do more than their share—they must do their utmost to make up for those whose circumstances prevent them from doing it. **The interests and desires of each of us in this war can be translated into service in no more effective way than by conforming our food habits to the needs of the hour.**

FLOUR AND BREAD IN THE ALLIED COUNTRIES

All the Allied countries have been stretching their meagre wheat-supply to the limit and are enforcing the most stringent regulations.

The flour is required to be of high extraction—ordinarily from 81 per cent to 90 per cent, decidedly higher than our 74 per cent. Even with this coarse, gray flour a large percentage of substitute must be mixed, usually 25 per cent. In England there are local regulations on the use of mashed potato in bread. Their bread must be twelve hours old before it is sold, so that people will not be tempted to eat too much. The result is seldom palatable. In France no flour at all may be used to make the delectable pastries and cakes which have long been the delight of the French people and their guests. In Italy, macaroni, which in many regions is as much the "staff of life" as bread, must contain 43 per cent substitute, and in some places may not be manufactured at all.

Both England and France have subsidized bread; the Government has set a price below cost and itself makes up the difference to the baker. England has appropriated $200,000,000 for the purpose.

Bread rations are in force in both France and Italy. France has recently put her whole people on a rigorous ration which limits them to two-thirds of the amount of bread that they have been accustomed to. Remember that bread is a far more important part of the French diet than of ours. Even children under three have bread cards allowing them 3½ ounces a day. Rations are not a guarantee that the amount mentioned will be forthcoming; they only permit one to have it if it can be obtained. One interesting result of the stringency, according to an American officer writing from Paris, is that guests even at formal dinners, may be asked to bring their own bread, finding this postscript on their invitations: "Apportez un peu de pain si vous le voulez."[1] In Italy the very limited bread rations are fixed locally.

England has compulsory rations for meat and butter or margarine and sugar, but not for bread. Her bread system is voluntary like ours, but much more detailed. The voluntary ration allows one-half pound of bread a day for sedentary and unoccupied women and larger allowances up to a little over a pound for men doing heavy labor. Waste of any kind is very heavily punished—one woman was fined $500 for throwing away stale bread.

"Why not send corn abroad?" One hears the question over and over again. The answers are many. In the first place, we *are* sending corn over—our exports of corn during March, 1918, increased 180 per cent and of corn meal 383 per cent over the

[1] "Bring a little bread if you wish it."

pre-war average. This they are using as we are using it in our Victory bread. But they must have enough wheat to make a durable loaf of bread at the bakeshops, where for generations all the baking has been done. The French housewife has no facilities for bread-making and the French woman does not know how and has not the time to learn. She is doing a man's work and her own woman's labor besides, and the extra unaccustomed labor of bread-making cannot be added to her burdens.

WHY WE IN THE UNITED STATES DO NOT HAVE BREAD CARDS

Some people, disturbed either selfishly or patriotically by the failure of a neighbor to conserve wheat, have asked why the Food Administration trusts to voluntary methods, why it does not ration the country.

Rationing may come yet, but any such system bristles with difficulties. The cost to the Government has been variously estimated all the way from $10,000,000 to $45,000,000 a year. Fifty per cent of the population could not be restrained in their consumption by rationing, for they are either producers or live in intimate contact with the producer. A wheat ration which would be fair for the North might actually increase the consumption in the South. Finally, the burden of a bread card would fall largely not on the well-to-do, who eat less wheat already and can easily cut down further, but on those with little to spend, who might have to change their whole food habits.

The success that is meeting our method of voluntary reduction of consumption "will be one of the remembered glories of the American people in this titanic struggle."

CHAPTER IV

THE MEAT SITUATION

Meat shortage is not a war problem only. We had begun to talk of it long before the war, and we shall find it with us after peace is declared. Great production of beef can take place only in sparse settlements. As the tide of increasing population flows over a country, the great cattle-ranges are crowded out, giving place to cultivated fields. More people means less room for cattle—a relative or even absolute decrease in the herds.

WHERE EUROPE'S MEAT HAS BEEN PRODUCED

In spite of their crowded territory, the majority of European countries have raised most of their meat themselves, though usually they have had to import fodder to keep up their herds. They have been less dependent on import for meat than for wheat. Great Britain is the only country which has imported much meat—almost one-half her supply. Her imports, and to a lesser extent those of other European countries, have come chiefly from Denmark and Russia in Europe, and from six countries outside—the United States, Canada, Argentina, Uruguay, Australia, and New Zealand.

THE WAR AND THE EUROPEAN MEAT-SUPPLY

Imports of both animals and fodder are interrupted. With meat as with wheat, the great shortage is due to lack of ships.

Australia and New Zealand, and to a lesser extent South America, are cut off. Fodder such as cottonseed press-cake cannot be shipped in large amounts as it takes three times as much shipping to transport feed as it does the meat made by the animals from it. Denmark's supply of animals to Great Britain has practically stopped, because of her own shortage, and because much of what she has goes to Germany.

The European herds have been cut down. Every one of the warring countries has fewer meat animals now than before the war. There were roughly 100,000,000 animals less in Europe at the end of 1917 than in 1914. Many of those left are in very poor condition, so that the shortage is even more serious than is indicated by the falling off in numbers.

Belgium, Serbia, and Roumania are in the worst condition. Practically all the animals in those countries have been killed or confiscated by the invading German and Austrian armies. This is one cause of their terrible famine conditions.

The United Kingdom, France, and Italy have also lost seriously. France is the greatest loser of the three, with more than one-fifth of her herds gone. The enemy has driven off large numbers of her cattle. She, like the others, is in difficulty not only for meat, but for milk. Her situation is complicated by the fact that she has no great cold-storage plants like ours, and so must get meat-supplies at frequent intervals.

Before the war Germany was much better prepared than the Allies in that she had many more animals in proportion to her population than they. But she was more dependent upon imports of feed, and as her commerce has been cut off, she has had to kill her animals faster. Counting up all her animals in terms of cattle according to the amount of meat they would yield, shows a loss of over one-third. For Austria, there are no

nearly so economical as eating grain
when grain is fed to a cow, only 3½ p
the grain is turned into meat or fat, a
up by the cow in its own daily living.
grain directly, he uses at least 85 per c
81½ per cent more of the grain is actua
So Europe to-day has to sacrifice her l
bread instead of turning it into meat.

Alongside this shortage has come a
meat for the great armies. The soldier'
more meat than is eaten by the civilian

THE MEAT RATIONS O

The shortage has compelled vigorous
in order to make the distribution as
Compulsory meat rations are enforced
tries. They vary, of course, from time
of available meat changes, but the foll

system has made distribution easier and more fair and greatly lessened the distressing "queues" of people waiting before butchers' shops for their allowance. The regulations allow each person 4 coupons a week. Children under 10 are on half-rations. At first, 3 of these coupons could buy 5 pence' worth of beef, pork, or mutton, and one had to be used for a limited amount of bacon, ham, poultry, or game. The total amounted to about 1¼ pounds of meat a week.

Because of the increased amount of bacon and ham which the United States was able to send in the late spring, heavy workers were permitted in May 2 extra coupons, for which they might buy a pound of bacon. Boys between 13 and 18 years were allowed 1 extra coupon for bacon, poultry, or game. But at the same time only 2 instead of 3 coupons were to be used for fresh meat, so as to cut down further the slaughtering of cattle. Heavy fines are imposed for wasting food or profiteering.

In the restaurants the meat portions are about a fifth of the size of those served in an American hotel. An American staying in London said recently that he could eat two meals in succession in a London restaurant, and leave the table still minus that self-satisfied feeling that a meal in America gives.

At first France used meatless days instead of rations, and in the spring of 1918 went back to meatless days. High prices also keep down consumption. In July, 1917, there were 2 meatless days, and cattle could not be slaughtered on the 2 preceding days. Though this order was abolished in October, 1917, meat had gone up so high in price that consumption went away down. The Paris letter of the London *Daily News* and *Leader* on February 28, 1918, says that rump steak was selling for 4 shillings 2 pence—$1 per pound. Since May 15, 3 days a week must be meatless—Wednesday, Thursday, and Friday. On

these days all butchers' shops are closed. Horse meat may be sold, but no poultry or game. Fish is scarce and very expensive.

Italy has meatless days, formerly 2, and since May, 1918, 3. The ration and the number of cattle to be slaughtered are decided locally and strictly regulated.

The Central Powers probably have the lowest meat ration. The quantities allowed vary in different parts of the country, but the average in Germany has been about 9 ounces a week per person. It was reported that this was reduced to 6 ounces in the middle of May—barely two small servings each week.

THE PART OF THE UNITED STATES

As with wheat, meat for Europe must come chiefly from the United States and Canada, since ships are few and the Atlantic the shortest route. The extra demand upon us is to offset the loss from inaccessible markets and the depleted herds in Europe. The United States is now exporting far larger quantities than it has ever exported before. In March, 1918, we sent over 87,000,000 pounds of beef. Ordinarily we export between 1,000,000 and 2,000,000 pounds a month. Of pork we sent 308,000,000 pounds—six times more than usual. It is roughly estimated that it is necessary to send 75,000,000 pounds of meat and meat products of all kinds abroad weekly to the Allies and our army.

To buy and sell this huge and unusual quantity of meat, a careful organization has been necessary. At first the Allied nations bought meat in this country as best they could in competition with the domestic market and each other, often feverishly to meet emergencies. **Last December a commission was formed to buy for all the Allies.** The prices to be paid are settled by experts, after careful study, so that packers, storage ware-

houses, and producers shall all have adequate, but not excessive return for their labor. The buying is planned ahead so that we can ship at times when we have plenty.

The meat which we are shipping now is coming in part from an increased slaughter of cattle and hogs, a condition which may have serious consequences in reducing our reserve. The need for conservation is constant, though at times the situation becomes easier in one kind of meat or another. In the summer of 1917 we were short on hogs. In the spring of 1918, thanks to the "keep-a-pig" movement and vigorous conservation, as well as high prices, we temporarily had hogs in plenty. Beef is short for the summer season. Policies must change frequently with fluctuating supplies and varying demands from Europe. However, the export demand for our forces and the Allies is limited only by shipping capacity, and it may be that we shall have a still larger demand at the war's end which will tax any reserve which we can possibly accumulate.

MEAT CONSERVATION

Meat does not play nearly so important a part in the world's dietary as we are accustomed to think. There is no comparison, in the quantity consumed, between meat and bread, or even meat and sugar or potatoes. Half of the people of the earth eat little or none of it. Only in two kinds of communities is meat used largely—new and thinly populated countries with much grazing-land, or wealthy industrial countries.

Australia and New Zealand are of the first type, consuming more meat per person than any other country in the world—5 pounds a week in Australia and 4 pounds in New Zealand. The United States, parts of which may be considered in both

classes, eats about 3¼ pounds per person weekly. This is much less than some years ago, when there was more grazing-land.

Great Britain, because it could afford to import it, used about 2¼ pounds a week before the war. Germany's consumption was slightly lower. France, Denmark, Switzerland, with fewer animals or less wealth, are small meat-eaters, the average amount being about 1½ pounds a week—about half as much as our consumption.

MEAT AND OTHER PROTEIN FOODS

Meat is eaten partly because of its pleasant flavor and partly because it is a source of protein which is necessary to build or renew the various parts of the body. Every cell in the body contains it and needs a steady supply.

Meat is a valuable protein food, but so are plenty of others—fish, cheese, eggs, milk, dried beans, dried peas, nuts, cereals. Cottage-cheese is the most nearly pure protein of anything that we eat. We can get protein just as satisfactorily from cheese and the other animal protein foods as from meat, and almost as satisfactorily from the vegetable protein foods. **The old idea that meat is especially "strengthening" has no foundation.** Neither is one kind of meat less thoroughly digested than another.

There is little danger in this country that our diet will fall too low in protein. Many of us eat considerably more than we need. Even those who must spend a dangerously limited amount on their diet, are not apt to be low in protein, for they often err on the side of spending an unwise proportion of their money on meat. Most scientists now consider three ounces of carefully chosen protein per day a safe allowance for an average man. An average woman needs less.

It is not at all difficult for an interested person to count up roughly whether he is eating more or less than this quantity. A small serving of lean meat or fish, about two inches square and three-quarters of an inch thick, contains about one-half ounce of protein. Two eggs, a pint of milk, a quarter of a cup of cottage-cheese, an inch-and-a-quarter cube of American cheese, each have about this same amount. So does a cup and a half of baked beans or two and a half cups of cooked cereal or six half-inch slices of bread (3 x 3½ inches). A person eating six of these portions daily will of course have his three ounces of protein. A man moderate in his eating and patriotic in his saving of meat will probably find his consumption not far from this quantity.

THE MEAT SUBSTITUTES

Fish. The possible supply of fish is practically unlimited, and much of it is little appreciated by us. We eat on the average only 18 pounds apiece per year, though our meat consumption is 170 pounds. The British and Canadians use much more fish than we do—56 and 29 pounds respectively. The United States Bureau of Fisheries and many State colleges are constantly introducing new varieties, from shark down. We should learn to value the many kinds which are available, fresh, dried, and canned, not merely the few we happen to be used to.

Eggs form a very valuable food not only for protein, but for mineral salts and vitamines as well. It is unfortunate that the price is often high, but it should be realized that expenditure for eggs makes expenditure for meat unnecessary.

Poultry is not now listed as a meat substitute by the Food Administration because the supply has become very limited.

Cheese is one of the best substitutes for meat. It represents

milk, one of the most easily digested protein in our diet and the most valua cussed in Chapter VII.

Nuts are usually thought of as a lux protein and fat they contain makes th food. Peanuts are usually classed with sidered the most valuable nut-crop of th are growing so fast in importance that th 60 per cent in 1917. They are used for as for human food. Peanut-butter or a investment, but it should be counted a food, not eaten as an extra. The occas ing injudicious eating of cheese and nu to forgetting that they are very subst them at the end of an already sufficient

Peas and Beans are taken up with Chapter VIII.

Why do not the Allies use these substi they haven't them. Dairy products

CHAPTER V

FATS

To a person who has been in Europe since the war began the question of the importance of fats is no longer debatable. Having practically gone without them, he knows they are important. In Germany it is the lack of fat that is the cause, perhaps, of the most discomfort and makes the German most dissatisfied with his rations. Even when the diet was sufficient, it was not satisfactory if low in fat.

This dependence on fat in the diet is due to several reasons, both physiological and psychological. Some people, the Japanese for example, habitually eat but little. But it is the habit of both Europeans and Americans to use considerable fat both on the table and in cooking. The taste of food is not so pleasing without it. Their recipes almost all use fat in one form or another, so that when little or none is available, a change must be made in most of the methods of cooking. Practically all food must be boiled, and is lacking in the flavor and texture to which we are accustomed. The food, no matter how nutritious it may be, will not taste good.

Fats are very concentrated food, a fact which gives them added value in war-time, making them the most economical food to ship. **A pound of any fat gives 2¼ times as much energy as a pound of sugar**—the reason for the slogan "Fats Are Fuel for

Fighters." Soldiers engaged in the most strenuous physical activities need fuel for all the energy they expend. Bacon, butter, all the forms of fat give them the most energy in the smallest weight of food.

Fats stave off the feeling of hunger longer than other foods because they pass more slowly from the stomach and delay the passage of foods eaten with them. A slice of bread and butter will "satisfy" one for a much longer time than a slice of bread and jelly, even though there is enough jelly to give exactly the same amount of fuel. In the countries in which there is a fat shortage, the appetite does not stay satisfied during the usual period between meals, even when the previous meal contained the customary amount of calories. The feeling of hunger is sometimes almost constant.

Certain fats are valuable for an entirely different reason. Milk fat, either in the milk or as butter, beef fat which is a constituent of oleomargarine, the fat in the yolk of egg, all contain one of the vitamines needed by children in order to grow properly, and by grown people to keep in good health. Lard and the vegetable fats and oils, like nut or vegetable margarine and cottonseed-oil, do not contain this substance, but if there is sufficient milk in the diet, there will be plenty of this "fat-soluble vitamine." In all other respects the fats are alike from a nutritional standpoint. One fat can replace another without harm.

Until the war came there was little need of knowing or bothering as to what kind of fats we ate, or of concerning ourselves with the fact that many more varieties were available than most of us used. Now it does make a decided difference. **Our armies and those of the Allies need fat, a great deal of it, and we must ship them the kind most suited to their purposes. We can use what the Allies and the Army do not need.**

THE SITUATION ABROAD

There is a shortage of the animal fats, lard, butter, and oleomargarine for the same reasons, of course, that cause the meat shortage. England, particularly recently, has had very little, less even than the French and Italians, who are not accustomed to using much.

England was the largest butter importer in the world, getting her supply mostly from northwestern Europe, Denmark, Russia, Sweden, and Holland. Russia can no longer supply her. Neither can the neutrals, who have been supplying Germany under pressure; they need Germany's coal. Although the United States has increased her butter exports to the United Kingdom, if our entire exports went to them, it would supply only 6 per cent of the amount needed.

To help the situation, England has greatly increased her manufacture of oleomargarine. Oleo oil and vegetable oils are being imported in large quantities and now England uses twice as much margarine as butter. But even with the margarine to help out, there is but little to go around. The weekly ration of butter and margarine is one-fourth of a pound per person, and at times even that amount has not been available. In April an American newspaper man in London reported that he had forgotten what butter tasted like. It could only be obtained on the farms, and even those who made it were strictly limited in the amount that they could keep themselves. Not even margarine could be served at luncheon or dinner. There were long queues in front of the shops before the distribution was better systematized. At present the total amount of fat in the diet is increased somewhat by the allowance of bacon and ham.

In Germany the fat shortage has been so severe that, combined with the bread shortage, it has been the greatest cause of food riots. Before the war the Germans imported about half their supply, most of which is now cut off. Of course, the vegetable oils from the United States and the tropics are not available. The neutrals have had to lessen their exports because of their own shortage, and the embargo which the United States laid on its exports of fats to neutrals. Germany's inability to feed her animals has greatly curtailed her supply of animal fats.

As a result the rations have been decreasing steadily in spite of every effort. Bones are collected and the fat extracted. Seeds, such as those of the sunflower, and the kernels of fruit have the oil pressed from them. During 1915–16 the rations varied from 3¼ ounces to 10 ounces of table fat a week. By December, 1917, it had been decreased, so that the average total fat ration was a little under 3 ounces a week, some communities receiving a little more, and others none at all. The local newspapers give interesting side-lights showing the results of this shortage. An owner of a boot-shop was prosecuted by the police for having 70 pairs of good shoes which he would sell only in exchange for butter or bacon. (*Brunswick Volksfreund*, January 16, 1918.)

THE SITUATION IN THE UNITED STATES

The United States has great resources of vegetable oils, cotton-seed, peanut, corn, and olive oil. It is this apparent plenty that makes it so difficult for many to visualize the shortage abroad. We are shipping about one-third of the lard which we produce, and large quantities of oleo oil for oleomargarine. Although the exports of butter in 1917 have almost been doubled since the

preceding fiscal year, it is relatively unimportant, representing only about 1 per cent of the production. We are shipping cotton-seed oil also, but this requires tank-steamers, which are scarce. In general, as the oils are much more difficult to handle and impossible for the armies to use, we must ship the solid animal fats.

The Individual's Part in Fat Conservation. Although at present there is butter and lard on the market, the need for conserving it is important, just as in the case of meat. **Waste of any kind should be abhorrent to all of us at this time.** There probably has been a greater waste of fat than of any other commodity, but it is encouraging to note that this waste has been decreased by conservation. The amount of fat in city garbage has gone down all over the country. In Columbus, Ohio, the fat in the garbage was almost 50 per cent less in 1917 than in 1916. In fourteen large cities with a total population of over 5,000,000 nearly 40 per cent less fat was recovered in March, 1918, than in March, 1917.

Not only can fat be saved by carefully avoiding every bit of waste, but less can actually be used. **Fry food less, and bake, broil, or boil them more. Use vegetable oils.** In a long view of the food situation, it is the animal fats that cause gravest concern, because of the years necessary to build up a herd. **We must send as much fat abroad as possible, and create reserves for periods of shortage with a minimum depletion of our herds.**

CHAPTER VI

SUGAR

Of all the foods which it is necessary to conserve, sugar is the easiest to do without. If the war and what it means has become part of a person's consciousness, he wishes only the bare essentials. Sugar is a luxury of former times which has become a commonplace to-day. The average use in the United States was 83 pounds per person last year—1⅗ pounds a week—less than one hundred years ago the yearly consumption was 9 pounds. Sugar was a rare luxury. It will do no harm to regard it so again.

WHY IS THERE A SUGAR SHORTAGE?

Sugar is scarce for two reasons—much less beet-sugar is actually being grown, and some of the cane-sugar is too far away to be available. The sugar-beet, grown in temperate climates, and the sugar-cane, native in tropical and semitropical regions, are the only two sources of sugar large enough to be of more than local importance.

Before the war, 93 per cent of the entire world crop of beet-sugar was grown in Europe. The industry was started by Napoleon in the early nineteenth century when he was at war with most of Europe, and France was shut off from her supply of cane-sugar from the West Indies. The industry spread over the great plain of Central Europe, from the north of France over Belgium, Germany, Austria-Hungary to Central Russia. In 1914 all of these countries were producing enough sugar for

ESTIMATED THAT ONE-THIRD OF WORLD'S PRODUCTION BEFORE THE WAR WAS PRODUCED WITHIN BATTLE LINES

their own needs. England produced none at all, but the continent, especially Germany and Austria, supplied her with about 54 per cent of what she needed.

The beet-sugar industry in the United States started in 1863 and has grown rapidly since 1897. In 1917 it supplied 22 per cent of the consumption.

Sugar-cane is grown in tropical and semitropical countries all over the globe. Cuba leads in the amount produced, and consumes only a small fraction of her production herself. Java, too, is a large exporter. India raises millions of tons but has to import some to fill all her needs. In the United States, Louisiana, Texas, and some parts of Florida produce about 6 per cent of what we use, but our dependencies, Porto Rico, the Hawaiian Islands and the Philippines all export to us, and together with Cuba, make up the deficiency.

The war has changed entirely the peace-time distribution. The map shows what the battle-lines have done to the beet-fields of Europe. Belgium and the northern part of France, in which practically all the beets were grown, are in German hands. In 1914 the battle-line eliminated 203 of the 213 French sugar-factories. In 1916–17 the falling back of the Germans had returned 65 factories to the French, but now again some of these have fallen into the enemy's hands. The French crop in 1915–16 was only one-fifth of the crop before the war and the following year it was only a fourth. Italy's crop was 25 per cent less in 1916–17 than before the war and the estimated yield for this year is 50 per cent less. England, of course, can no longer get sugar from the continent.

So the allied world must import cane-sugar or have almost no sugar at all. The cane-sugar supply is largely dependent on shipping. Ships cannot be spared to go to the East. Therefore

the sugar of Cuba and the rest of the West Indies, our main source of supply, must be shared with the Allies. It is to the credit of all involved that every effort is being made to see that the division is a fair one. A commission representing the Allies, the United States, and Cuba apportioned the 1917–18 Cuban crop and fixed its price. Competitive bidding by the many purchasers, with the danger of forcing up the price of the limited supply, was in this way prevented.

THE EFFECT OF THE SHORTAGE

The rations of Europe are the most convincing evidence of the extent of the sugar shortage. In England ½ pound a week is allowed for each person, half the average amount used in their households before the war. France had sugar cards long before she had any other ration. Seven ounces a week were allowed, and later in the year only one-quarter of a pound. Germany and Austria-Hungary in 1918 had an average household ration of 6 ounces a week.

The United States in accordance with its usual method is asking the individual for voluntary conservation of sugar. Each household is asked to observe a voluntary weekly ration of not more than three-quarters of a pound per person. Extra amounts of sugar for home canning may be secured by making a certified declaration to the dealer that it is to be used only for canning and preserving.

Food manufacturers using sugar are dealt with more strictly than private individuals. Every business using sugar may purchase it only on certificates obtained from the Federal Food Administrators. At present manufacturers of essential products such as canned vegetables and fruits may get the amount needed

to fill their necessary requirements. Manufacturers of less essential products get a percentage of what they used before—at present soft-drink and candy manufacturers get 50 per cent and ice-cream makers 75 per cent.

The decreased use of sugar has resulted in the release of the ships which had been used to bring Cuban sugar to this country —50,000 tons freed to carry men and munitions and food to the Western front in the spring of 1918.

IN PLACE OF SUGAR

The United States is much more fortunate than Europe in having sweets other than sugar at its disposal. As our corn-crop is immense, the supply of corn-syrup is limited only by the ability of the manufacturers to turn it out. It is a wholesome, palatable syrup and can often take the place of sugar both in cooking and on the table. Although it is not as sweet as ordinary sugar, it serves the body for fuel in the same way. We have cane-syrup, and also molasses and refiner's syrup, by-products of sugar-making, and in some parts of the country, local products such as honey, maple sugar and syrup, and sorghum syrup. Sweet fruits, both fresh and dried, contain considerable amounts of sugar, some of the dried fruits being over two-thirds sugar, and when added to cereals, for example, take the place of part or all of the sugar.

THE PRICE OF SUGAR

In spite of the short supply, the Food Administration has kept down the price of sugar by an agreement with the sugar-refineries that the wholesale price must not be more than the cost of the

raw sugar plus a fixed amount to cover costs of refining. Even during December, 1917, when there was a severe shortage in the East, the price remained stable. Refiners say that without regulation by the Food Administration the price would have gone to 25 cents a pound or higher.

At times the Food Administration has had to use compulsion to keep the price level and has not hesitated to do so where necessary. Licenses have been withdrawn for failure to comply with regulations, and businesses closed for longer or shorter times. One dealer who was charging 14 cents a pound for sugar had his store closed for 2 weeks; another paid $200 to the Red Cross for overcharging; another, for selling sugar and flour without regard to regulations, was closed indefinitely.

TO CUT DOWN ON SUGAR

Use fewer sweets of any kind and use sugar substitutes. Sugar does serve a desirable purpose in making certain of our foods more palatable, but the quantity necessary for this is small, and for much of it other sweets can be used instead. The household consumption uses by far the largest percentage of the sugar-supply. Its economical use also helps to provide a reserve for preserving surplus fruits. **Such "extras" as candy and cakes can be entirely dispensed with.**

Of course, sugar is a food, as it is burned in the body for fuel. But there are two good physiological reasons for avoiding excessive amounts. If we eat a large quantity in candy after already sufficient meals, we are overeating and may suffer from digestive disturbances in consequence. Eating sweets instead of other food is also bad and a cause of undernourishment. Sugar is pure carbohydrate, and although we may eat enough to

satisfy the feeling of hunger the body will lack minerals, protein, and other substances absolutely necessary for its well-being. The person may feel satisfied, but he will be undernourished nevertheless.

The conservation of sugar will not only permit a fair distribution to our associates in the war, but insure a sufficient amount for our own men. It is especially valuable for them because it burns so rapidly in the body that it gives energy more quickly than other foods.

CHAPTER VII

MILK—FOR THE NATION'S HEALTH

In war-time there is constant danger of letting down the health standard. Food is high in price, demands on incomes are many and insistent, worst of all, life is being expended so freely abroad that we become careless about it at home. But while we are fighting to make the world a decent place to live in, we must keep up our health and vigor at home.

Milk is vital to national health and efficiency. We can conserve wheat and meat, sugar and fats, and be none the worse for it, but **we must use milk.** The children of to-day must have it for the sake of a vigorous, hardy manhood to-morrow. A quart for every child, a pint for every adult is not too high an ideal.

There is no lack of evidence that children suffer if they do not have enough. In New York in this past winter, two things were observed which are undoubtedly closely connected—increased undernutrition among school children, and decreased use of milk. The Mayor's Milk Committee in the fall of 1917 reported that the city as a whole had cut down its milk consumption 25 per cent, and certain tenement districts 50 per cent. The majority of the families who had reduced the milk to little or none were giving their children tea and coffee instead—substituting drinks actually harmful to children for the most valuable food they could have.

About the same time as the milk investigation, a count was made of the number of New York children who were seriously

undernourished—half-starved. Twelve were found in every 100 children, twice as many as the year before.

The warring nations in Europe fully realize the value of milk. In the face of a serious shortage they are making every effort to get to the children as much milk as can be produced or imported. Until children, mothers, and invalids are supplied, no one else may buy any. For adults, milk is an almost unknown luxury.

All the countries have definite milk rations for their children. These rations would be adequate if they could be obtained, but many times they fall short. Every effort is made to treat all children, rich and poor, alike. The price of milk is regulated, but parents who cannot afford to buy it are given it free or at cost. Dried and condensed milk are used where they can be obtained and fresh milk cannot. Thousands of tons of condensed milk have been sent over from America. There has been scarcely a child born in the north of France and none in Belgium whose continued life during all that period has not been dependent upon American condensed milk. At one time the Ministry of Food in Great Britain, anticipating a milk shortage in the winter bought large quantities of dried milk for distribution by local health committees and infant welfare societies.

In Belgium, in spite of the misery of the people, fewer young children are dying than before the war, because of the milk and bread and care that they get at the "soupes" and children's canteens. But in Poland, Roumania, and Serbia, thousands and tens of thousands of babies and young children have died since the war for lack of milk and other food.

Grown people should use milk and appreciate that it is far more than a beverage. Comparing it with tea and coffee is not sensible. The idea that food is "something to chew" breaks

down completely when milk is considered. "Milk is both meat and drink."

THE VALUABLE CONSTITUENTS OF MILK

What gives milk its unique value? It must contain especially valuable substances, since it is an adequate food for the young for several months after birth and is one of the most important constituents of a grown person's diet.

It contains protein of a kind more valuable, especially for growing children, than that of most other foods. Milk protein separates out when milk sours and is the familiar cottage-cheese. Because of it, milk, whole or skim, is a valuable meat substitute. When we drink milk, therefore, we need less meat.

It contains fat. A pint of milk has a little more than half an ounce—the same amount as an ordinary serving of butter. By drinking milk we can save fat as well as meat.

Milk-sugar is also present, more or less like ordinary sugar, but not so sweet. The sugar, the fat, and part of the protein burn in the body, giving the energy needed for the body's activities. A pint gives as much fuel as 4 eggs, or half a pound of meat, or 3 or 4 large slices of bread. Although bread is cheaper fuel than milk, its economy compared with meat or eggs is obvious. The pint of milk costs usually about 7 cents, while the eggs and meat cost at least two or three times as much. The economy of substituting milk for at least part of the meat in the diet is plain. It is the advice of an expert to "let no family of 5 buy meat till it has bought 3 quarts of milk."

But this is not the whole story of milk. Milk is extraordinarily rich in calcium, commonly called lime, necessary for the growth of the bones and teeth and also important in the diet of adults,

even though they have stopped growing. No other food has nearly as much. A pint has almost enough calcium for one entire day's supply. It takes 2¼ pounds of carrots to give the same amount, or 7 pounds of white bread or the impossible quantity of 21 pounds of beef! A diet without milk (or cheese) is in great danger of being too low in calcium, especially a meat-and-bread diet without vegetables.

Among the most necessary constituents of milk are the two vitamines. One is present chiefly in the fat and the other in the watery part of the milk. Without milk fat, in whole milk or in butter, we run considerable risk of having too little of the fat-soluble vitamine. The other vitamine is more widely distributed in our foods, so that with our varied diet there is little danger of not getting enough.

Milk, therefore, fills all the needs of the child, except, perhaps, for iron, and is one of the best foods in the diet of grown people. **There is no other food that has all the virtues of milk; it therefore has no substitute. "The regular use of milk is the greatest single factor of safety in the human diet."**

OUR MILK PROBLEM

We have not nearly enough milk in the United States to give every child the quart and every adult the pint which they should have. Although we actually produce about a quart per person, more than half of this is used for butter, cheese, and cream, and only about two-thirds of a pint is drunk directly as milk or used in cooking. This spring we have slightly more than this amount because of the dairymen's response to the patriotic appeal to maintain production, but our supply and consumption of milk are still far below what they should be.

To increase the quantity in the country the price of milk must be low enough for people to afford it, but high enough to keep the producer and distributer in the business. The question of a fair price is a difficult one. The cost of feed has gone up, labor is scarce and dear, but further economies in both production and distribution are still possible. This past winter the Food Administration and the Dairy Division of the Department of Agriculture have assisted many local commissions in determining fair milk prices and pointing out economies all along the line of the milk business.

It is most unfortunate that ignorance of the value of milk makes people particularly sensitive to a change in its price. When it goes up even a cent a quart, many cut down their consumption, while a considerably larger advance in the price of meat will make little difference in the amount bought.

If diminished use of milk continues, dairymen may go out of business and permanent harm be done, both to us and to those dependent on us abroad. A factory may close down and when the need comes reopen immediately, but if a cow is killed it takes practically three years to replace her.

The milk we have should be used as effectively as possible. The most economical way for a nation to use its milk so as to get the benefit of all the food in it, is, of course, as whole milk, or evaporated or dried whole milk. The next most economical way is in the form of whole-milk cheese, since all but the whey is used in it.

Cream and butter are much less economical unless all the skim milk is used. As 41 per cent of our milk-supply goes to make butter, we have large quantities of skim milk containing as much protein, it is estimated, as all the beef we eat.

At present we feed the largest part of this to animals or actu-

ally throw it away. Since the cottage-cheese drive of the Department of Agriculture, an increasing amount of it is being made into cottage-cheese—a palatable and useful meat substitute. It can, of course, be used as a beverage or in cooking. Whey also has many food uses. Buttermilk, too, is justly popular and healthful. Skim milk is not a substitute for whole milk for children.

Cream, valuable food though it is, is also extravagant in its use of milk. It takes five quarts of milk to produce a quart of cream. Buying whole milk is, therefore, better policy than buying cream and no milk. The sale of cream is now forbidden in Great Britain for this reason.

OUR MILK ABROAD

It is our supply of milk that is helping to meet the milk shortage abroad. Before the war we exported very little. By 1917 our export of evaporated, condensed, and dried milk had gone up twentyfold. In the spring of 1918 we sent over the equivalent in whole milk of almost 50,000,000 pounds a month, and should probably have sent much more were it not for the lack of ships. After the war, when ships are released, the demand for it will be enormous. It will take years to build up the dairy-herds of Europe again, so we shall continue to be their main source of supply.

Learn and teach the unique value and economy of milk. Do everything to prevent in this country the tragic results which are following the cutting down of milk consumption abroad.

CHAPTER VIII

VEGETABLES AND FRUITS

Vegetables and fruits represent a different and happier phase of the food situation than our short supplies of wheat and meat. The vegetables especially are a great potential reserve of food, for they can be produced in quantity in three or four months on unused land by labor that otherwise might not be used.

Abroad every resource for vegetable-raising is being utilized to the utmost. France and Belgium have long made the most of all their land. Now England has made it compulsory to leave no ground uncultivated. Golf-courses are now potato-patches. Parks and every bit of back yard all grow their quota of vegetables. The boys in the old English public schools work with the hoe where before they played football.

We in America have no more than touched our capacity for raising gardens. What we have done is merely a beginning. As the war goes on we shall realize more and more the necessity for seizing every opportunity for active service. The accomplishments of the summer of 1917 showed the possibilities of the work, and placed it beyond the purely experimental stage. They have given experience and emphasized the value of expert advice and the economy of community efforts.

Not only is the "plant a garden" a civilian movement, but it has taken hold in the armies as well. The American Army Garden service is planning truck-gardens in France to supply our troops. The Woman's Auxiliary Army Corps of England plants

gardens back of the British lines. Last summer the French fed 20,000 of their men from similar gardens.

Every pound of food grown in these home and community gardens relieves the railroad congestion and gives more space for transporting munitions and coal. Every pound of food grown releases staples for Europe. Extra production of food of any kind, anywhere, takes on a new significance in the presence of half a world hungry.

If you cannot grow vegetables, use them in abundance anyway. They are too perishable to ship abroad and too bulky, containing so much water that it would be an uneconomical use of shipping to export them. But the more America eats of almost any kind of vegetable or fruit, the less of the more durable, concentrated foods will she require. The products are so varied in kind and composition that they can be used to serve almost any purpose —beans and peas to save meat; potatoes and others to save wheat; sweet fruits to save sugar; jams, even, when spread on bread, to save fat. All will improve the health and therefore increase human energies for winning the war.

IN THE WAR DIET

To Save Meat. Beans and peas and peanuts are the only vegetables with much protein, so that they are the ones thought of primarily as meat substitutes. There are many kinds of them, fresh or dried, more than most of us realize. It is worth while to add to the diet not only the ordinary white or navy beans, but kidney, lima, black or soy beans, cow-peas, the many colored beans such as the pinto, frijoles, and the California pinks. It is these latter kinds that are used by the Mexicans as their chief standby. The Army and Navy use huge

quantities of the white beans, and the Allied Governments are also buying tons of the pintos.

The 1917 bean-crop, in response to the patriotic appeal, was 50 per cent higher than the normal. Nearly all this increase was in the colored beans, chiefly pintos. The Food Administration, fearing that some of this unusual surplus might be wasted and the farmer discouraged from producing a large output in 1918, bought up the extra crop and distributed it for sale at the different markets.

Though soy beans and peanuts at least are exceptions, the protein in beans and peas is not so satisfactory as a body-builder as that in animal foods, so that a diet in which they are a large part should contain also some milk or eggs or a little meat. Two cups (half a pound) of shelled green peas or beans, or one cup with a cup of skim milk gives as much protein as a quarter of a pound of beef. Dried beans and peas are, of course, cheaper than the canned with their larger amount of water. At the usual market prices as much fuel can be bought for 5 cents spent for dried peas as for 25 cents for canned peas.

Meat-savers do not all have to be high-protein foods, since the diet of most of us contains considerably more protein than is necessary. Any vegetable can be a "meat extender." The pleasant flavor of meat can be obtained in meat stews, such as the delicious French "pot-au-feu." Stews can easily be made with less meat and more vegetables than usual. The meat allowance is now so very small in France and the vegetables so scarce in the cities, that the ingenuity of even the French woman is taxed to get a meal.

To Save Wheat. Potatoes to save wheat! The great potato drive to utilize the surplus of our huge 1917 potato-crop, 100,000,000 bushels above normal, has fixed in every one's mind the

interchangeableness of these two foods. Potatoes are one-fifth starch—almost the same quantity as in cooked breakfast cereals. Because of this starch, they give as satisfactory a fuel as wheat or corn or any other cereal. One medium-sized potato supplies the same number of calories as a large slice of bread, and contains more mineral salts than white bread. Europe has learned to eat potatoes instead of wheat. When bread has been short potatoes have been the mainstay in every country. They are to-day the largest single element, in terms of energy, in the German war ration.

Sweet potatoes are also first-class wheat-savers. So to a lesser extent are most vegetables and fruits. Very few except white and sweet potatoes contain much starch, but many of them have considerable sugar, which serves as fuel just as starch does—carrots, beets, onions, parsnips, and practically all fruits such as bananas, oranges, and grapes.

To Save Sugar. We want sugar, of course, both for fuel and flavor. The vegetables and some fruits have their sugar so covered up by other tastes that it does not help to make the food sweet. It does, of course, serve for fuel. Bananas especially are fuel foods, containing much starch when green, which changes to sugar as the fruit ripens. The sweetest fruits are the dried ones—dates, figs, raisins, prunes. They have so much sugar that they can well be used in place of candy.

To Save Fat. Although few common fruits and vegetables contain fat, jam is a real fat-saver. It is of high fuel value, and has the advantage of being a "spreading material" so that it can replace butter with bread and cereals. Jam is of great importance in Europe to-day and all the Governments have taken steps to keep up the supply. It is a regular part of the English army ration.

To Keep the Nation Well. An increase in the use of vegetables

and fruits is practically sure to mean an increase in health. Many of us, especially city-dwellers, do not eat enough of them. Many a young girl who "does not like vegetables" probably owes part of her languor to inadequate diet. The old-fashioned "touch of scurvy" formerly noticed at the end of the winter and even now not an unknown thing, was probably due to lack of vegetables in the winter diet. The constipation which is so disturbingly prevalent can usually be cured or prevented by eating vegetables and fruits in sufficient quantities. One of the most serious limitations in the diet of many of the very poor is the lack of vegetables as well as milk and the unduly large proportion of meat and bread. In a community in New York City with high mortality rate, 75 mothers whose diet was observed, ate vegetables on the average only twice a week, and fruit about the same number of times.

It is not difficult to understand why vegetables and fruits are so important. Only a few are especially valuable as fuel or as a source of protein, but almost all are high in mineral salts and can supply the "roughage" desirable in the diet. Some also contain the vitamines, the leafy vegetables being especially valuable because, like milk, they contain the two kinds. The "greens," leafy vegetables like spinach, cabbage, Brussels sprouts, asparagus, and lettuce, are the ones that help most in these last ways—"protective foods," they have been called. They are rich in the iron, calcium, and other minerals that some of the other foods lack. The use of plenty of these vegetables should go far toward keeping up health.

CANNING AND DRYING VEGETABLES AND FRUITS

The value of these foods both for the nation's health and for saving staples applies just as much in winter as in summer. In

war-time, a winter supply, either stored, dried, or canned, takes on special significance because of their substitute value if the supply of staples runs critically low.

The canning industry, because it makes vegetables obtainable at all times and places, has been of great importance in the health and development of the country. Smith, in his "Commercial Geography," says that "canning, more than any other invention since the introduction of steam, has made possible the building up of towns and communities beyond the bounds of varied production." A century or two ago, sailors after a voyage of a year or two, almost always came home with scurvy. Recently Nansen and his men drifted in the Arctic ice for years and remained in good health, because of their supply of canned vegetables, fruits, and meats.

The Government has not been slow in appreciating the need of canned vegetables for the Army and Navy. It has commandeered about 25 per cent of the canned beans, 12 per cent of the corn, and 18 per cent of the tomatoes of the 1917 pack. Large amounts will be needed this year also. Much of the 1918–19 supply for our troops in France is to be canned in France, by arrangement with the French Government, thus saving valuable shipping space.

Drying, or dehydrating, has long been known for beans, peas, and corn, and for dates, prunes, figs, and raisins. But dried potatoes, beets, carrots, and "soup mixtures" are more or less new. The drying, of course, merely removes most of the water from the vegetable, and if the process is properly carried out, soaking the vegetable in water restores its original freshness.

The war, with the need for every ounce of food and the increasing transportation difficulties, has brought the process into prominence. The dehydrated products, if properly stored, seem to

keep a long time. Their saving in freight and shipping is plain when it is remembered that the fresh vegetables and fruits often contain over 90 per cent water, and the dried from 8 per cent to 10 per cent. Ships are too precious to be used for carrying unnecessary water. Our Government has placed orders for several thousand tons of dehydrated potatoes for the Army and may use other dried products as they can be obtained.

Canada has sent abroad within the past 3 years over 50 million pounds of dehydrated vegetables, about two-thirds of which was the vegetable-soup mixture and one-third dried sliced potatoes. When reconstituted this would make about 400,000,000 pounds of vegetables. Germany has been drying her vegetables and fruits far more than we. In 1917 she had over 2,000 commercial plants, and an elaborate system of distributing all the available fresh material to the different plants to avoid waste.

Individuals and communities with gardens or wherever fresh products can be obtained should not be dependent upon commercial agencies. **As far as possible every family and every neighborhood should be self-supporting. Home and community canning and drying are important duties. Can and dry the surplus. Store up enough to carry through the next winter. Follow expert advice as to methods. Use the greatest care to prevent spoilage. Wherever possible unite with your neighbors in community canneries and dryers so that every one can have the benefit of the best equipment and the most skilled supervision.**

A great deal was done in 1917; millions of cans were put up and great waste prevented. But in 1918 more must be done. More vegetables must be raised and more must be canned. A great reserve for the winter is more necessary than ever.

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INDEX